CLAIMS

1. A wind energy facility with a completely closed or partially closed cooling circuit, with which the heat to be dissipated from the cooling circuit is dissipated by the tower or the nacelle of the wind energy facility.

2. The wind energy facility according to claim 1, wherein the tower has at least one cooling channel, and the coolant flows through this channel.

3. The wind energy facility of claim 2 wherein the coolant is air.

4. The wind energy facility according to claim 1, wherein both the driving line of the wind energy facility or parts of the driving line and/or the electrical devices for converting the electrical energy are connected to the cooling circuit.

5. The wind energy facility according to claim 1, wherein the tower is configured with two walls over at least two sections along its longitudinal axis and a double-walled region forms a cooling channel, with which the heated coolant introduced into the cooling channel dissipates its heat to the outer wall of the tower.

6. The wind energy facility according to claim 1, wherein the same coolant is used generally continuously for cooling the main driving line, as well as the devices of the power electronics.

7. The wind energy facility according to claim 2, wherein the cooling channel is supplied by at least one fan that serves to circulate coolant within the cooling circuit.

8. The wind energy facility according to claim 1, wherein the wind energy facility can be kept in operation even for outside temperatures of approximately -20°C to -40°C, and the tower can be heated by the cooling circuit.

9. Use of the tower of a wind energy facility as a cooling element and/or a heat exchanger for cooling air heated by devices that generate heat, *e.g.*, the driving line and/or electrical device for converting electrical energy, of the wind energy facility.

10. The wind energy facility according to claim 1, wherein the wind energy facility has at least two completely closed or at least partially closed cooling circuits, wherein one cooling circuit serves for cooling the driving line of the wind energy facility, and the other cooling circuit serves for cooling the electrical device for the conversion of electrical energy.

11. The wind energy facility according to claim 1, wherein there is at least one coolant line that serves to transport heated coolant.

12. The wind energy facility according to claim 11, wherein the coolant line is formed by a tube connected to devices that generate heat within the wind energy facility.

13. The wind energy facility according to claim 12, wherein the tube is connected at the coolant inlet side to a ventilation device, by means of which heated coolant is blown into the tube.

14. The wind energy facility according to claim 12, wherein the tube is more than ten meters long, and is formed in the lower part of the tower such that heated coolant originating from an electrical device for converting electrical energy is blown through the tube, and heated coolant is output again at the tube outlet, so that it can be cooled at the tower wall and then flow back to the tower base.

15. The wind energy facility according to claim 1, wherein the nacelle is completely or partially made out of a metal.

16. The wind energy facility according to claim 1, wherein the nacelle is equipped completely or partially with cooling ribs or other means for increasing the surface area of the nacelle.

17. A wind energy apparatus comprising:

a driving line for converting kinetic energy of the wind into electrical energy, said driving line including a rotor, rotor blades, and a generator connected to said rotor;

a nacelle for housing said driving line;

a transformer connected to the electrical output of the generator for feeding said electrical energy into a voltage network;

a tower for supporting said nacelle; and

a cooling system located within the tower.

18. The wind energy apparatus of claim 17, wherein the said cooling system comprises:

a tower cooling channel within said tower;

a nacelle cooling channel;

a flow guiding device in said nacelle cooling channel for directing fluid near said driving line; and

a fluid flowing through said tower cooling channels and nacelle cooling channels for providing heat exchange to outer walls of said tower.

19. The wind energy apparatus of claim 18, wherein the cooling system further comprises:

a cooling channel formed within said rotor blades, wherein said fluid, as heated by said generator, can circulate through said rotor blade to heat said rotor blade.

20. The wind energy apparatus of claim 18, wherein the inner walls of said tower cooling channel are comprised of plastic.

21. The wind energy apparatus of claim 18, wherein said cooling system further comprises:

heat exchange devices mounted to said tower cooling channels for additional heat exchange.

22. The wind energy apparatus of claim 16, wherein the cooling system is retrofit to the tower and includes a fluid transport tube that is adjacent the tower walls.

23. The wind energy apparatus of claim 17, wherein the said cooling system comprises of:

said tower configured in sections with double walls for forming two tower cooling channels;

at least one nacelle cooling channel;

at least one flow guiding device in said nacelle cooling channel for directing fluid near said driving line;

a first individual cooling circuit is positioned at the lower portion of said tower, and fluid flows through said tower cooling channels providing heat exchange to said rectifier, said transformer and outer walls of said tower; and

a second individual cooling circuit is positioned at the upper portion of said tower, wherein fluid flows through said tower cooling channels and said nacelle cooling channel providing heat exchange to outer walls of said tower, said generator, and said nacelle.

24. The wind energy apparatus of claim 23, wherein said cooling system further comprises:

a cooling channel formed within said rotor blades, wherein fluid in said second individual cooling circuit is heated by said generator, and circulates through said rotor blade to heat said rotor blade.

25. The wind energy apparatus of claim 23, wherein the inner walls of said tower cooling channels are comprised of plastic.

26. The wind energy apparatus of claim 23, wherein said cooling system further comprises heat exchange devices mounted to said tower cooling channels for additional heat exchange.

27. A heat transfer system comprising:

a tower;

a heat source adjacent said tower;

an exhaust tube adjacent an interior section of said tower; and

a ventilation device coupled to said heat source for obtaining fluid and circulating the fluid adjacent the tower.

28. The heat transfer system of claim 27, wherein said exhaust tube is connected to the outlet of a power box as the heat source for suctioning heated fluid from said power box and blowing it into said exhaust tube thereby cooling the power box and heating the outer walls of said tower.

29. The heat transfer system of claim 28, further comprising a second ventilation device for suctioning heated fluid from said power box and blowing it into the input base of said exhaust tube thereby heating the outer walls of said tower.

30. The heat transfer system of claim 27, wherein the exhaust tube is made of plastic.

31. The heat transfer system of claim 27, wherein said tower is in the form of a hollow tube and the exhaust tube is within the hollow tube of the tower for circulating fluid therein.

32. The heat transfer system of claim 27, wherein said tower is a solid beam tower and the exhaust tube is placed adjacent said tower.

33. The heat transfer system of claim 27, wherein the heat source is a wind powered generator located at a top position of said tower and said exhaust tube extends from a top portion of said tower downward.

34. A method for supplying heat exchange to a wind energy apparatus comprising:

cooling a generator by flowing fluid through a nacelle cooling channel and near said generator; and

transferring heat from said fluid to an outer wall of a tower as said fluid flows downward through a tower cooling channel.

35. The method of claim 34, wherein said fluid also flows through a rotor blade cooling channel within a rotor blade upon completing flow near said generator in said nacelle cooling channel, thereby heating said rotor blades.

36. A method for supplying heat exchange to a wind energy apparatus comprising:

cooling a generator by flowing a first fluid near said generator within a nacelle cooling channel;

heating an outer wall of a tower as the first fluid flows through a first tower cooling channel;

crossing through the middle of said tower;

circulating the first fluid within a first individual cooling circuit through said nacelle cooling channel, near said generator, and through said first tower cooling channel;

cooling a transformer by flowing a second fluid near said transformer within a second tower cooling channel;

heating an outer wall of said tower as the second fluid flows through said second tower cooling channel; and

circulating the second fluid within said second individual cooling circuit.

37. A method for supplying heat exchange to a wind energy apparatus comprising:

positioning an exhaust tube in the middle of a tower;

blowing heated fluid from a power box positioned at base of said tower into bottom end of said exhaust tube;

heating outside walls of said tower with said fluid exiting top end of said exhaust tube; and

re-circulating said fluid back into said power box with said ventilation device.

[Letterhead of Eisenführ, Speiser, and partners]

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New Claim 1

1. Wind energy facility (1) with a completely closed or partially closed cooling circuit, wherein the tower of the wind energy facility is included in the circuit and the heat to be dissipated from the cooling circuit is essentially dissipated by the tower (3) of the wind energy facility (1).